UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/637,844	08/08/2003	Hui Jin	Flarion-78APP1 (103)	4376

			EXAMINER
26479	7590	06/28/2006	BAKER, STEPHEN M

STRAUB & POKOTYLO
620 TINTON AVENUE
BLDG. B, 2ND FLOOR
TINTON FALLS, NJ 07724

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/637,844	JIN ET AL.
	Examiner	Art Unit
	Stephen M. Baker	2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 March 2006</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-9 and 19-21* is/are rejected.

7)☒ Claim(s) *4,5 and 10-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

2.   Claims 1-3, 6-9 and 19-22 are rejected under 35 U.S.C. 103(a) as being

unpatentable over U.S. Patent No. 6,490,705 to Boyce (hereafter "Boyce") in view of

U.S. Patent No. 5,392,299 to Rhines *et al* (hereafter "Rhines").

Boyce discloses arrangements for transmitting and receiving packets of block-

interleaved Reed-Solomon coded video data over the internet. Each symbol of each

such Reed Solomon code is a byte that serves as a "Z vector" comprising Z = 8

elements, each such "element" including K = 1 bits (col. 6, lines 60+). Accordingly,

Boyce provides "a plurality of Z vectors, each Z vector including Z elements, each

element including K bits" with "the plurality of Z vectors corresponding to a binary

codeword, portions of said binary codeword having a direct mapping relationship to a

plurality of transmission units."   In reading and writing symbols from Boyce's block de-

interleaver memory (109), the symbols of the codewords are written in columns and

read in rows (col. 8, lines 10+). Boyce does not describe the interleaved (4,3) Reed-

Solomon code data block as a "codeword" of the interleaved code, however it is. If the

Reed-Solomon codeword generator polynomial is G(x), then the codeword generator for

Reed-Solomon codewords interleaved to a depth "d" is $G'(x)=G(x^d)$.

Boyce does not discuss the details of addressing the de-interleaver memory (109) to perform the necessary reading and writing.

Official Notice is given that accessing a block de-interleaver memory by generating a pair of row and column indexes was well-known conventional practice at the time the invention was made, as evidenced by Rhines (Fig. 7B).

A row index for accessing Boyce's de-interleaver memory would serve as a "row identifier" and a column index for accessing Boyce's interleaver memory would serve as a symbol identifier, *i.e.* "Z vector identifier," within the identified row. In such an arrangement using row and column indexes, reading a row of symbols from Boyce's de-interleaver memory, as is required to form a packet, would "read P times K divided by D bits ... from each column identified by the ... Z vector identifier" for D=1. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Boyce's row/column interleaving by using row and columns counters, effectively providing a "row identifier" and a symbol identifier, *i.e.* "Z vector identifier,"

Regarding claims 6 and 7, Boyce's de-interleaver memory (109), or Boyce's interleaver memory (505), can be considered to have dimensions of P x M bytes, being accessed as described in a corresponding one of the claims.

Regarding claim 19, program instructions or hardware for accessing Boyce's interleaver memories or de-interleaver memories serve as a "memory access control module."

Regarding claim 22, Boyce also mentions a software implementation (col. 14, lines 54+).

Allowable Subject Matter

3.   Claims 4, 5 and 10-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4.   Applicant's arguments filed 20 March 2006 have been fully considered but they are not persuasive.

The claims as presently amended were not discussed during the interview. The examiner indicated that if applicant would argue the functional significance of all of the limitations in the then-rejected claims, the examiner would be able to advance the application toward allowance. Applicant has done this only in part, by arguing that interleaved codewords cannot be considered a single codeword. The examiner anticipated being able to point out that applicant "codeword" in the rejected claims is not even specified to be an error correction code codeword, yet alone a non-interleaved error correction code codeword.

The examiner does not agree with applicant that, because each column of bytes is a Reed-Solomon codeword in Boyce's combination (Fig. 3) of three sets of HP information bytes and one set of HP parity bytes (hereafter referred to as "the entire RS-

coded portion of the packet group") it must be the case that the entire RS-coded portion of the packet group cannot be considered a single codeword. Applicant does not specify the code to which the claimed "codeword" belongs, and furthermore it is well-understood by practitioners in the error control coding art that a set of interleaved Reed-Solomon codewords is equivalent to a single interleaved Reed-Solomon codeword. As Boyce's Reed-Solomon code symbols are represented by eight binary bits, Boyce's interleaved Reed-Solomon code is a "binary code."

The examiner does not agree that the claimed "P-bit" units define over Boyce's byte units. The claims do not set a specific value for "P."

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The article by Kong et al explains why a set of interleaved codewords of a cyclic code is itself a codeword of a cyclic code.

6.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571) 272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).
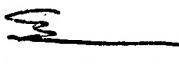
Stephen M. Baker
Primary Examiner
Art Unit 2133

smb